81. (AS NEW HEREIN) The plasma display panel as recited in claim 80, further comprising:

a dielectric layer formed on the rear substrate; and

barriers formed on the dielectric layer defining the discharge spaces.

82. (AS NEW HEREIN) The plasma display panel as recited in claim 80, wherein the phosphor layer has a thickness in a range of from 10 μm to 50 μm.

83. (AS NEW HEREIN) The plasma display panel as recited in claim 80, wherein the address electrodes are formed on the underlying dielectric layer.

84. (AS NEW HEREIN) The plasma display panel as recited in claim 80, further comprising barriers formed on the rear substrate and defining the discharge spaces.

REMARKS

In accordance with the foregoing, various of the pending claims 28 to 45 have been amended, claim 49 is deleted and new claims 46-68 are added to afford a varying scope of protection for the invention. Accordingly, claims 28-68 are pending and under consideration.

No new matter is presented.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: September 18, 2001

By: _____
Registration No. 22,010
H. J. Staas

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please DELETE claim 39.

Please AMEND the following claims:

28. (ONCE AMENDED) A discharge cell of a surface discharge type plasma display panel, comprising:

a cavity bounded by [respective] a pair of opposing and spaced sidewalls of [a pair of] respective barriers, formed on a first substrate, extending commonly with the pair of [barriers] sidewalls in a first direction;

an address electrode on the first substrate[, at the bottom of the cavity,] and extending in the first direction;

a pair of display electrodes formed on a surface of a second substrate, covered by an insulating layer and positioned in opposed relationship with the address electrode, the pair of display electrodes extending in a second direction, transversely to and crossing the barriers and the cavity therebetween, and defining the discharge cell; and

a phosphor layer disposed within the cavity on one of the first and second substrates, the phosphor layer having a thickness in a range of from 10 μm to 50 μm.

29. (AS UNAMENDED) A discharge cell as recited in claim 28, wherein the phosphor layer is formed on the first substrate, aligned within the cavity, and covers the entire surface of the cavity including sidewalls of the pair of barriers and thereby to constitute a discharge cell of a reflecting type plasma display panel.

30. (AS UNAMENDED) A discharge cell as recited in claim 28, wherein the pair of display electrodes has a discharge gap of a first width at a central portion of a unit luminescent area and a gap of a second, greater width, at both end portions of the unit luminescent area.

31. (AS UNAMENDED) A discharge cell as recited in claim 28, wherein a top portion of each barrier is of a dark color.

32. (AS UNAMENDED) A discharge cell as recited in claim 29, wherein a top portion of each barrier is of a dark color.

33. (AS UNAMENDED) A discharge cell as recited in claim 28, wherein a width of each cell, in the second direction, is approximately one-third a length thereof, in the first direction.

34. (AS UNAMENDED) A discharge cell as recited in claim 28, wherein each of the pair of display electrodes comprises a metal conductor extending in the second direction, transverse to the first direction and the pair of spaced barriers, the pair of metal conductors having a combined width in the first direction which is limited so as not to block more than 21% of light emitted from the discharge cell.

35. (ONCE AMENDED) A plasma display panel of a surface discharge type and having an array, of plural columns in the first direction and plural rows in a second direction transverse to the first direction, of plural image elements, each image element comprising a respective set of unit luminescent areas, each set of unit luminescent areas comprising a set of discharge cells, wherein each discharge cell comprises:

a cavity bounded by respective opposing and spaced sidewalls of a pair of barriers formed on a first substrate, the cavity extending commonly with the pair of barriers in a first direction;

an address electrode on the first substrate, extending in the first direction,

a pair of display electrodes formed on a surface of a second substrate covered by an insulating layer and positioned in opposed relationship with the barriers, the pair of display electrodes extending in a second direction, transversely to and crossing the barriers and the cavity therebetween, and defining the discharge cell, and

a phosphor layer disposed within the cavity on the first substrate; and

each set of discharge cells comprises a common number of discharge cells in successively spaced adjacent positions in the second direction, the respective phosphor layers of each set of the discharge cells being in a common sequence of respective, different colors, and the plural rows of the array having respective, common numbers of sets of discharge cells, aligned in the columns of the array.

36. (AS UNAMENDED) A plasma display panel as recited in claim 35, wherein:

each set of discharge cells has respective, first and second combined dimensions in the first and second directions which are substantially the same.

37. (AS UNAMENDED) A plasma display panel as recited in claim 35, wherein:

each set of discharge cells comprises plural cells having plural, respective and different color phosphor layers, each of which layers having a thickness in a range of from 10 μm to 50 μm.

38. (AS UNAMENDED) A plasma display panel as recited in claim 35, wherein:

the plural cells of each set are of a common width in the second direction.

Please DELETE claim 39.

40. (AS UNAMENDED) A plasma display panel as recited in claim 35 wherein, in each discharge cell, the phosphor layer covers the respective, opposing sidewalls of the pair of barriers.

41. (AS UNAMENDED) A plasma display panel as recited in claim 35 wherein, in each discharge cell, the phosphor layer is formed on the first substrate, aligned within the cavity, and covers the address electrode and extends to the respective, opposing sidewalls of the pair of barriers, said phosphor layer having a thickness in a range of from 10 μm to 50 μm.

42. (AS UNAMENDED) A plasma display panel recited in claim 35, wherein each of the pair of display electrodes of each discharge cell comprises a transparent conductor and a respective metal conductor extending therewith in the second direction, and the pair thereof provides a predetermined discharge gap at a central portion of the cell.

43. (AS UNAMENDED) A plasma display panel as recited in claim 35 wherein, in each discharge cell, the phosphor layer is formed within the cavity and extends to the respective, opposing sidewalls of the barriers and a top portion of each of the barriers has a dark color.

44. (AS UNAMENDED) A plasma display panel as recited in claim 35, wherein each of the pair of display electrodes comprises a metal conductor extending in the second direction, transverse to the first direction and the pair of spaced barriers, the pair of metal conductors having a combined width in the first direction which is limited so as not to block more than 21% of light emitted from the discharge cell.

45. (AS UNAMENDED) A plasma display panel of a surface discharge type and having an array of plural image elements, arranged in plural columns in a first direction and plural rows in a second direction, transverse to the first direction, wherein each image element comprises a respective set of unit luminescent areas:

each unit luminescent area comprises:

a cavity, bounded by respective opposing and spaced sidewalls of barriers formed on a first substrate and extending in the first direction,

an address electrode [of] on the first substrate extending in the first direction,

a pair of display electrodes formed on a second substrate, covered by a dielectric layer and arranged to constitute a corresponding row of the array in opposed relationship with the cavity, and

a phosphor layer disposed on an inside surface of the cavity [on the first substrate] with a thickness in a range of 10 μm-50 μm; and

each set of unit luminescent areas comprises a common number of unit luminescent areas in successively spaced adjacent positions in the second direction, the respective phosphor layers of each set of unit luminescent areas being in a common sequence of respective, different colors, and the plural rows of the array having respective, common numbers of sets of unit luminescent areas, aligned in the columns of the array.

Please ADD the following NEW claims:

46. (NEW) A discharge cell of a surface discharge type plasma display panel, comprising:

a cavity bounded by respective opposing and spaced sidewalls of a pair of barriers superposed on a first substrate, the cavity extending commonly with the pair of barriers in a first direction;

an address electrode superposed on the first substrate, adjacent a bottom of the cavity and extending in the first direction;

a pair of display electrodes superposed on a surface of a second substrate, covered by an insulating layer and positioned in opposed relationship with respect to the address electrode, the pair of display electrodes extending in a second direction, transversely to and crossing the barriers and the cavity therebetween, and defining the discharge cell; and

a phosphor layer disposed within the cavity and superposed on one of the first and second substrates, the phosphor layer having a thickness in a range of from 10 μm to 50 μm.

47. (NEW) A discharge cell as recited in claim 46, wherein the phosphor layer is superposed on and covers the address electrode and exposed portions of the first substrate between the spaced and opposing sidewalls and substantially the entire respective surfaces of the spaced and opposing sidewalls of the pair of barriers.

48. (NEW) A discharge cell as recited in claim 46, wherein the pair of display electrodes has a discharge gap of a first width at a central portion of a discharge cell and a gap of a second, greater width, at both end portions of the discharge cell.

49. (NEW) A discharge cell as recited in claim 46, wherein a top portion of each barrier is of a dark color.

50. (NEW) A discharge cell as recited in claim 47, wherein a top portion of each barrier is of a dark color.

51. (NEW) A discharge cell as recited in claim 46, wherein a width of each cell, in the second direction, is approximately one-third a length thereof, in the first direction.

52. (NEW) A discharge cell as recited in claim 46, wherein each of the pair of display electrodes comprises a metal conductor extending in the second direction, transverse to the first direction and the pair of spaced barriers, the pair of metal conductors having a combined width in the first direction which is limited so as not to block more than 21% of light emitted from the discharge cell.

53. (NEW) A plasma display panel of a surface discharge type and having an array, of plural columns in the first direction and plural rows in a second direction transverse to the first direction, of plural image elements, each image element comprising a respective set of unit luminescent areas, each set of unit luminescent areas comprising a set of discharge cells, wherein each discharge cell comprises:

a cavity bounded by respective opposing and spaced sidewalls of a pair of parallel barriers superposed on a first substrate, the cavity extending commonly with the pair of barriers in a first direction;

an address electrode superposed on the first substrate, adjacent a bottom of the cavity and extending in the first direction,

a pair of display electrodes superposed on a second substrate covered by an insulating layer and positioned in opposed relationship with respect to the address electrode, the pair of display electrodes extending in a second direction, transversely to and crossing the pair of barriers and the cavity therebetween, and defining the discharge cell, and

a phosphor layer disposed within the cavity and superposed on and covering the address electrode and the opposed and spaced sidewalls; and

each set of discharge cells comprises a common number of discharge cells in successively spaced adjacent positions in the second direction, the respective phosphor layers of each set of the discharge cells being in a common sequence of respective, different colors, and the plural rows of the array having respective, common numbers of sets of discharge cells, aligned in the columns of the array.

54. (NEW) A plasma display panel as recited in claim 53, wherein:

each set of discharge cells has respective, first and second combined dimensions in the first and second directions which are substantially the same.

55. (NEW) A plasma display panel as recited in claim 53, wherein:

each set of discharge cells comprises plural cells having plural, respective and different color phosphor layers, each of which layers having a thickness in a range of from 10 μm to 50 μm.

56. (NEW) A plasma display panel as recited in claim 53, wherein:

the plural cells of each set are of a common width in the second direction.

57. (NEW) A plasma display panel as recited in claim 53 wherein, in each discharge cell, the phosphor layer covers the respective, opposing sidewalls of the pair of barriers.

58. (NEW) A plasma display panel as recited in claim 53, wherein said phosphor layer has a thickness in a range of from 10 μm to 50 μm.

59. (NEW) A plasma display panel recited in claim 53, wherein each of the pair of display electrodes of each discharge cell comprises a transparent conductor and a respective metal conductor extending therewith in the second direction, and the pair thereof provides a predetermined discharge gap at a central portion of the cell.

60. (NEW) A plasma display panel as recited in claim 53 wherein, in each discharge cell, the phosphor layer is formed within the cavity and extends to the respective, opposing sidewalls of the barriers and a top portion of each of the barriers has a dark color.

61. (NEW) A plasma display panel as recited in claim 53, wherein each of the pair of display electrodes comprises a metal conductor extending in the second direction, transverse to the first direction and the pair of spaced barriers, the pair of metal conductors having a combined width in the first direction which is limited so as not to block more than 21% of light emitted from the discharge cell.

62. (NEW) A plasma display panel of a surface discharge type and having first and second substrates and an array of plural image elements therebetween, arranged in plural columns in a first direction and plural rows in a second direction, transverse to the first direction, wherein:

each image element comprises a respective set of unit luminescent areas and each unit luminescent area comprises:

a cavity, bounded by respective opposing and spaced sidewalls of a pair of spaced barriers superposed on the first substrate and extending in the first direction,

an address electrode superposed on the first substrate, adjacent a bottom of the cavity and extending in the first direction,

a pair of display electrodes superposed on the second substrate, covered by a dielectric layer and arranged to constitute a corresponding row of the array in opposed relationship with the cavity, and

a phosphor layer within the cavity of a thickness in a range of 10 μm-50 μm; and

each set of unit luminescent areas comprises a common number of unit luminescent areas in successively spaced adjacent positions in the second direction, the respective phosphor layers of each set of unit luminescent areas being in a common sequence of respective, different colors, and the plural rows of the array having respective, common numbers of sets of unit luminescent areas, aligned in the columns of the array.

63. (NEW) A discharge cell of a surface discharge type plasma display panel, comprising:

a cavity bounded at least in part by a respective cavity sidewall supported by a back substrate;

an address electrode supported by the first substrate, aligned with the cavity and extending in a first direction;

a pair of display electrodes supported by a front substrate, covered by an insulating layer and positioned in opposed, spaced relationship with respect to a portion of the aligned address electrode and defining the discharge cell therebetween, said display electrode traversing the cavity sidewalls and extending in a second direction; and

a phosphor layer disposed within the cavity and supported on the cavity sidewall and the portion of the aligned address electrode.

64. (NEW) A discharge cell as recited in claim 63, wherein the phosphor layer has a thickness in a range of from 10 μm to 50 μm.

65. (NEW) A discharge cell as recited in claim 64, wherein a top portion of each cavity sidewall is of a dark color.

66. (NEW) A discharge cell as recited in claim 63, wherein the pair of display electrodes has a discharge gap of a first width at a central portion of a discharge cell and a gap of a second, greater width, at both end portions of the discharge cell.

67. (NEW) A discharge cell as recited in claim 63, wherein the address electrode is disposed adjacent a bottom of the cavity.

68. (NEW) A discharge cell as recited in claim 63, wherein a width of each disclosed cell, in the second direction, is approximately one-third a length thereof, in the first direction.

69. (NEW) A discharge cell as recited in claim 63, wherein each of the pair of display electrodes comprises a metal conductor extending in the second direction, transverse to the first direction, the pair of metal conductors having a combined width in the first direction which is limited so as not to block more than 21% of light emitted from the discharge cell.

70. (NEW) A plasma display panel of a surface discharge type and having an array, of plural columns in the first direction and plural rows in a second direction transverse to the first direction, of plural image elements, each image element comprising a respective set of unit luminescent areas, each set of unit luminescent areas comprising a set of discharge cells, wherein each discharge cell comprises:

a cavity bounded at least in part by a respective cavity sidewall supported by a back substrate;

an address electrode supported by the first substrate, aligned with the cavity and extending in a first direction;

a pair of display electrodes supported by a front substrate, covered by an insulating layer and positioned in opposed, spaced relationship with respect to, and extending in a second direction and crossing, a portion of the aligned address electrode and defining the discharge cell therebetween;

a phosphor layer disposed within the cavity and supported on the cavity sidewall and the portion of the aligned address electrode; and

each set of discharge cells comprises a common number of discharge cells in successively spaced adjacent positions in the second direction, the respective phosphor layers of each set of the discharge cells being in a common sequence of respective, different colors, and the plural rows of the array having respective, common numbers of sets of discharge cells, aligned in the columns of the array.

71. (NEW) A plasma display panel as recited in claim 70, wherein:

each set of discharge cells has respective, first and second combined dimensions in the first and second directions which are substantially the same.

72. (NEW) A plasma display panel as recited in claim 70, wherein:

each set of discharge cells comprises plural cells having plural, respective and different color phosphor layers, each of which layers having a thickness in a range of from 10 μm to 50 μm.

73. (NEW) A plasma display panel as recited in claim 70, wherein:

the plural cells of each set are of a common width in the second direction.

74. (NEW) A plasma display panel as recited in claim 70 wherein, in each discharge cell, the phosphor layer covers the respective, opposing sidewalls of the pair of barriers.

75. (NEW) A plasma display panel as recited in claim 70 wherein, in each discharge cell, the phosphor layer covers the address electrode and has a thickness in a range of from 10 μm to 50 μm.

76. (NEW) A plasma display panel as recited in claim 70 wherein, in each discharge cell, a top portion of each cavity sidewall has a dark color.

77. (NEW) A plasma display panel recited in claim 70, wherein each of the pair of display electrodes of each discharge cell comprises a transparent conductor and a respective metal conductor extending therewith in the second direction, and the pair thereof provides a predetermined discharge gap at a central portion of the discharge cell.

78. (NEW) A plasma display panel as recited in claim 70, wherein each of the pair of display electrodes comprises a metal conductor extending in the second direction, transverse to the first direction, the pair of metal conductors having a combined width in the first direction which is limited so as not to block more than 21% of light emitted from the discharge cell.

79. (NEW) A plasma display panel of a surface discharge type and having front and back substrates and an array of plural image elements therebetween, arranged in plural columns in a first direction and plural rows in a second direction, transverse to the first direction, wherein:

each image element comprises a respective set of unit luminescent areas and each unit luminescent area comprises:

a cavity, bounded by a respective cavity sidewall, supported by the first substrate,

an address electrode supported by the back substrate, aligned with the cavity and extending in the first direction,

a pair of display electrodes supported by the front substrate, covered by a dielectric layer and arranged to constitute a corresponding row of the array in opposed relationship with the cavity, and

a phosphor layer within the cavity, supported by the back substrate, and having a thickness in a range of 10 μm-50 μm; and

each set of unit luminescent areas comprises a common number of unit luminescent areas in successively spaced adjacent positions in the second direction, the respective phosphor layers of each set of unit luminescent areas being in a common sequence of respective, different colors, and the plural rows of the array having respective, common numbers of sets of unit luminescent areas, aligned in the columns of the array.

80. (NEW) A surface discharge type plasma display panel, comprising:

front and rear substrates in opposing, spaced relationship;

discharge spaces defined by respective sidewall surfaces supported by the rear substrate, extending in parallel spaced relationship in first and second transverse directions on the rear substrate;

respective phosphor layers in the discharge spaces and covering respective bottom and sidewall surfaces of the discharge spaces and supported by the rear substrate; and

address electrodes corresponding to respective phosphor layers and supported on the rear substrate, portions of each address electrode underlying respective bottoms of the discharge spaces being aligned in one of the first and second transverse directions.

81. (NEW) The plasma display panel as recited in claim 80, further comprising:

a dielectric layer formed on the rear substrate; and

barriers formed on the dielectric layer defining the discharge spaces.

82. (NEW) The plasma display panel as recited in claim 80, wherein the phosphor layer has a thickness in a range of from 10 μm to 50 μm.

83. (NEW) The plasma display panel as recited in claim 80, wherein the address electrodes are formed on the underlying dielectric layer.

84. (NEW) The plasma display panel as recited in claim 80, further comprising barriers formed on the rear substrate and defining the discharge spaces.

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SS 2675

S&H Form: (2/01)

REPLY/AMENDMENT FEE TRANSMITTAL

Attorney Docket No.	522.1919-C3
Application Number	09/654,893
Filing Date	September 5, 2000
First Named Inventor	Tsutae SHINODA et al.
Group Art Unit	2675
Examiner Name	

AMOUNT ENCLOSED 1208.00

RECEIVED SEP 20 2001 Technology Center 2600

FEE CALCULATION (fees effective 10/01/00)

CLAIMS AS AMENDED	Claims Remaining After Amendment	Highest Number Previously Paid For	Number Extra	Rate	Calculations
TOTAL CLAIMS	56	- 20 =	36	X $ 18.00 =	$ 648.00
INDEPENDENT CLAIMS	10	- 3 =	7	X $ 80.00 =	560.00
Since an Official Action set an original due date of _, petition is hereby made for an extension to cover the date this reply is filed for which the requisite fee is enclosed (1 month ($110); 2 months ($390); 3 months ($890); 4 months ($1,390); 5 months ($1,890)):					
If Notice of Appeal is enclosed, add ($310)					
If Statutory Disclaimer under Rule 20(d) is enclosed, add fee ($110)					
Total of above Calculations =					$ 1208.00
Reduction by 50% for filing by small entity (37 CFR 1.9, 1.27 & 1.28)					
TOTAL FEES DUE =					$ 1208.00

(1) If entry (1) is less than entry (2), entry (3) is "0".
(2) If entry (2) is less than 20, change entry (2) to "20".
(4) If entry (4) is less than entry (5), entry (6) is "0".
(5) If entry (5) is less than 3, change entry (5) to "3".

METHOD OF PAYMENT

- ☒ Check enclosed as payment.
- ☐ Charge "TOTAL FEES DUE" to the Deposit Account No. below.
- ☐ No payment is enclosed and no charges to the Deposit Account are authorized at this time (unless specifically required to obtain a filing date).

GENERAL AUTHORIZATION

☒ If the above-noted "AMOUNT ENCLOSED" is not correct, the Commissioner is hereby authorized to credit any overpayment or charge any additional fees necessary to:

Deposit Account No. 19-3935
Deposit Account Name STAAS & HALSEY LLP

☒ The Commissioner is also authorized to credit any overpayments or charge any additional fees required under 37 CFR 1.16 (filing fees) or 37 CFR 1.17 (processing fees) during the prosecution of this application, including any related application(s) claiming benefit hereof pursuant to 35 USC § 120 (e.g., continuations/divisionals/CIPs under 37 CFR 1.53(b) and/or continuations/divisionals/CPAs under 37 CFR 1.53(d)) to maintain pendency hereof or of any such related application.

SUBMITTED BY: STAAS & HALSEY LLP

Typed Name	H. J. Staas	Reg. No.	22,010
Signature	[signature]	Date	September 18, 2001